

TRW/SAFE BRIEFING

PAGE ii



AGENDA

MORNING

WELCOME AND AGENDA
 ED ROLLIN

INTRODUCTION TO TRW
 BOB WILLIAMS

INTRODUCTION TO TRW'S SAFE PROJECT
 ED ROLLIN

PROJECT STATUS
 ED ROLLIN

BREAK

BLOCK 1 REPORT

LARRY McLAUGHLIN

BREAK

BLOCK 3 REPORT

DAYLE McCLENDON

LUNCH

PAGE iii



AGENDA (CONTINUED)

AFTERNOON

SAFE ADPE

SAFE COMMUNICATIONS

TOUR OF BUILDING 103

• EXECUTIVE SESSION

BOB SPANBAUER

MAURICE FRANCE

ED ROLLIN

MAURICE FRANCE

BOB SPANBAUER

PAGE 1



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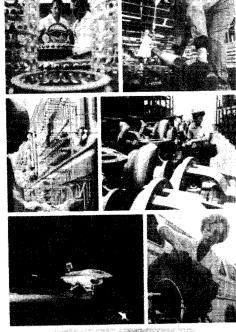
CAR AND TRUCK



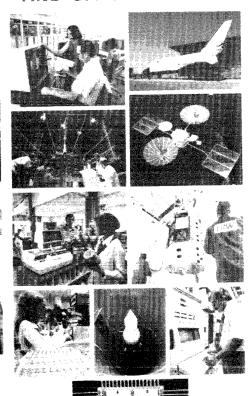
ELECTRONICS AND SPACE SYSTEMS

PAGE 2

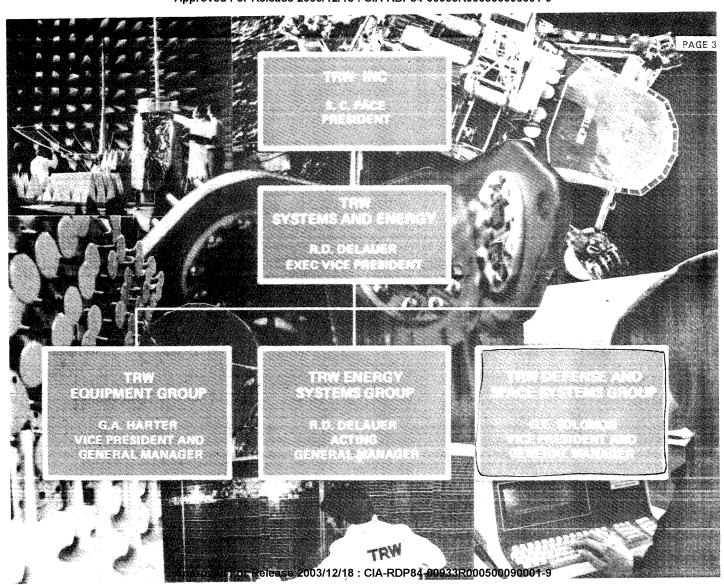


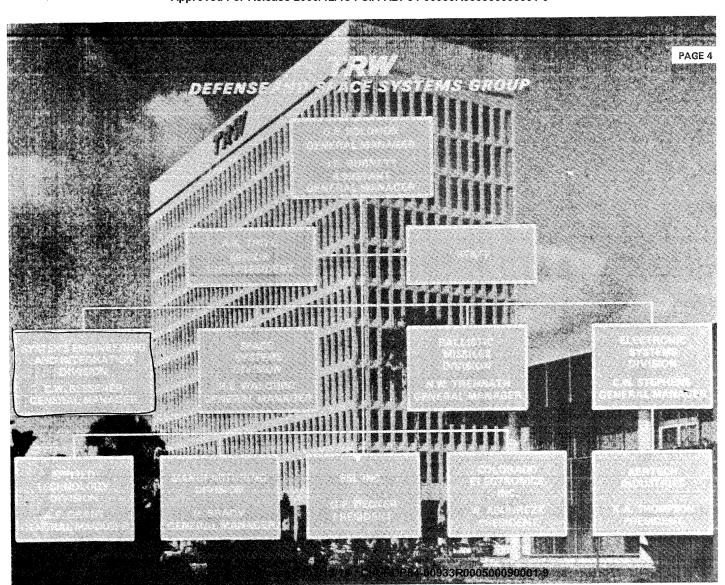


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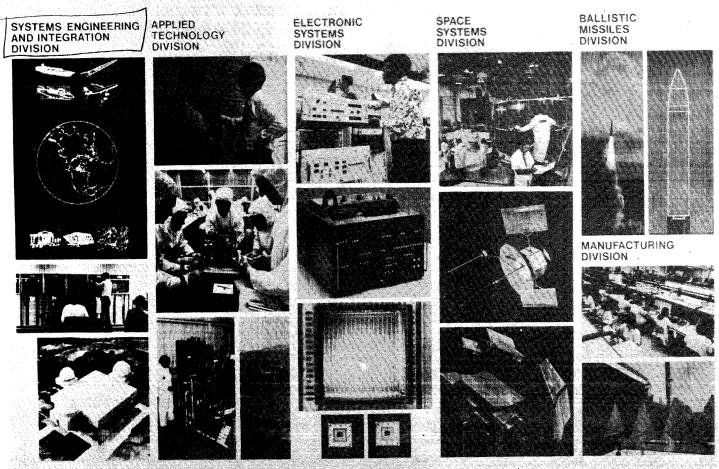




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PAGE 5



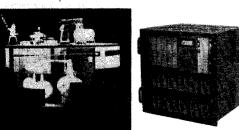


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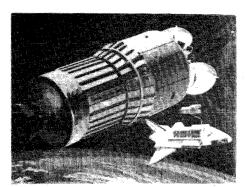
PAGE 6

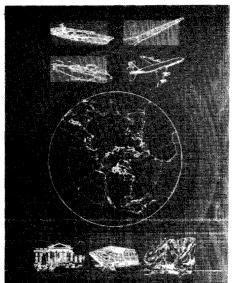


SYSTEMS ENGINEERING AND INTEGRATION DIVISION











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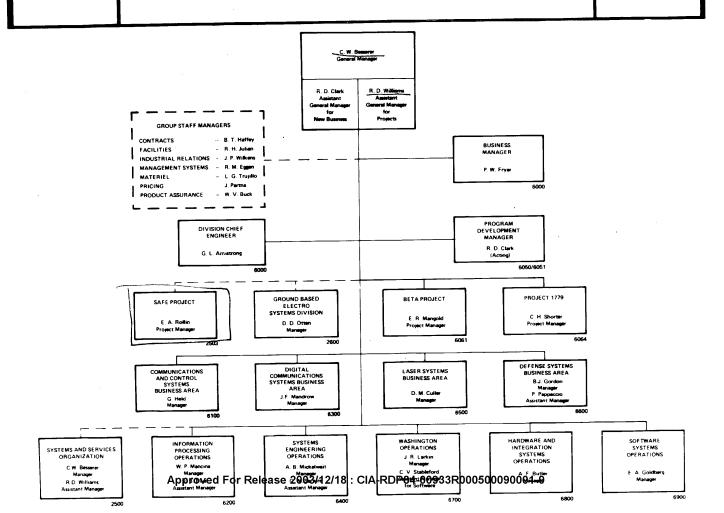
TRW

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SYSTEMS ENGINEERING AND INTEGRATION DIVISION

SEID PAGE 7

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MAJOR SOFTWARE PROJECTS

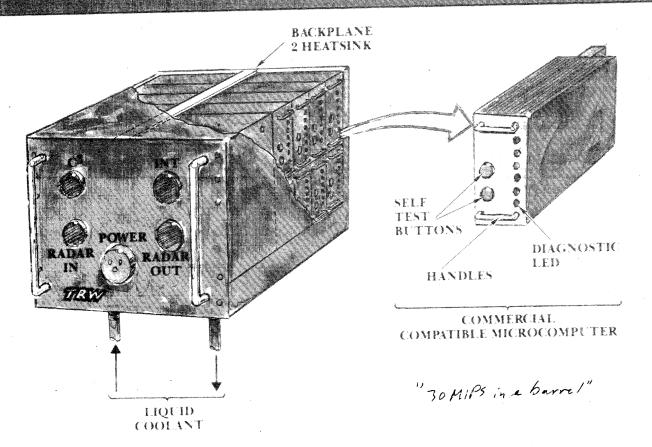
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PAGE 8 \$221 M MINUTEMAN SOFTWARE **BMD SYSTEMS TECHNOLOGY PROGRAM** OVER-THE-HORIZON BACK SCATTER RADAR APOLLO/SKYLAB SOFTWARE \$21 M SPACE TRANSPORTATION SYSTEM/IUS **EDIPS** SPACE SYSTEMS (INCLUDING TDRSS) PROJECT 0487/2930 **PROJECT 1779**

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DACE 1

TOMO DATA PROCESSOR MCTICAL PACKAGING CONCEPT

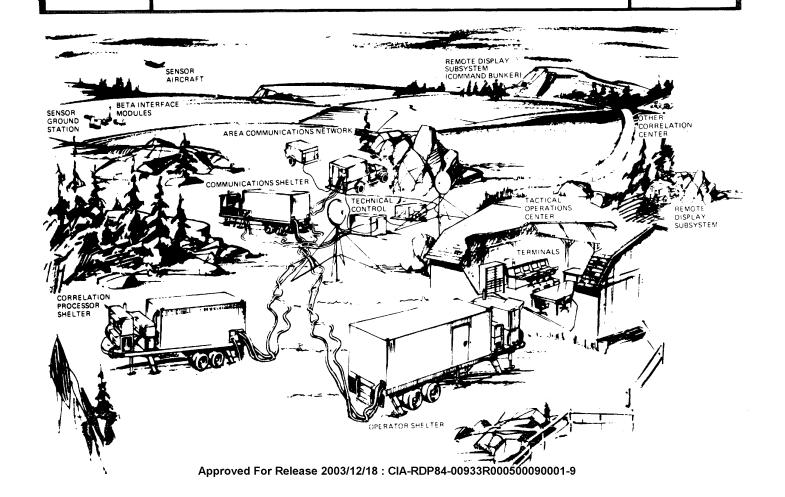


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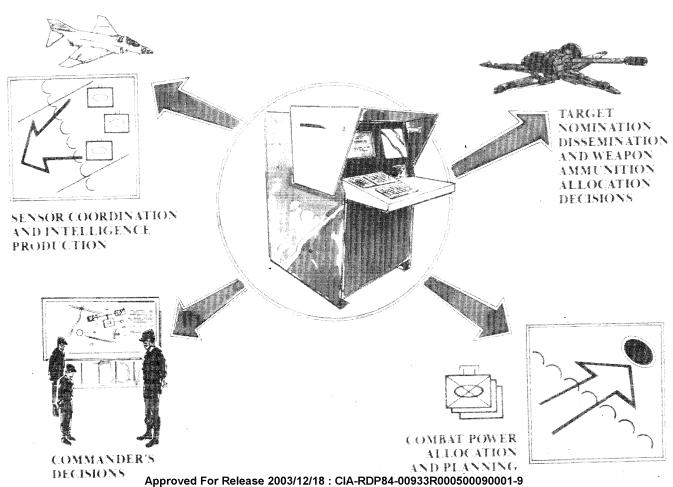
BETA CONFIGURATION

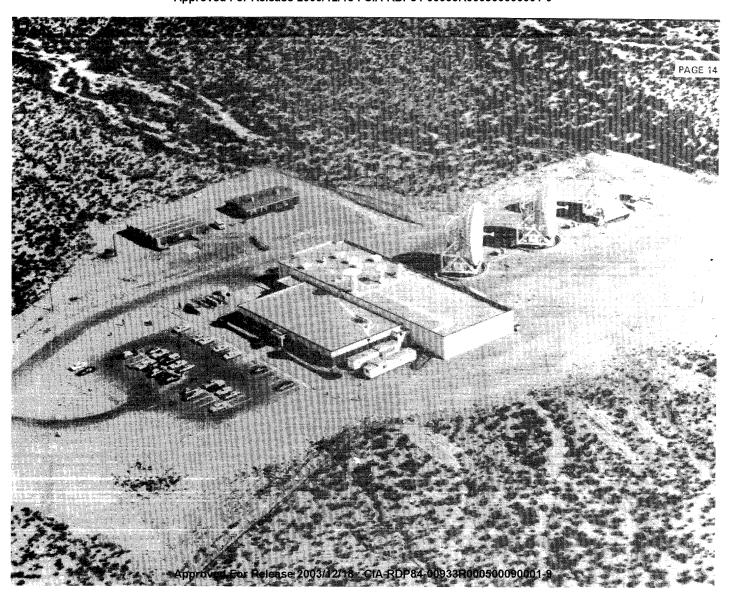
SEID PAGE 11



RETA SUPPORTS

PAGE 12





TDRSS GROUND STATION COMPLEXITY Comparison of Ground Station Capability

PAGE 1

ITEM	TYPICAL GROUND STATION	TDRSS GROUND STATION		
Active Antenna	1	.6 Ground, 26-TDRS		
Computers	pos de			
Uplinks	1	3-TDRS, 15-Forward		
Downlinks	2	3-TDRS, 32-Return		
Service Load	5-20 Passes Dav	~2500 Day		
Service Time	5-15 Min Pass	1 Min — 24 Hrs		
Normal Response Time	1 Day	30 Min		
Emergency Response Time	2 Hrs	5 Min		
Reconfiguration Time	2 Hrs	15 Sec — 5 Min		
Ephemeris Determination	1/Pass	4-TDRS, 85 User S/C		
Electronic Equipment	50 Racks	300 Racks		

SEID TECHNICAL STAFF PROFILE

PAGE 16 **SEID**

TOTAL SEID TECHNICAL STAFF 2285 3584 TOTAL SEID POPULATION

SEID EDUCATION AND EXPERIENCE

91% DEGREES 41% **ADVANCED DEGREES** 34% - MASTERS 7% - DOCTORATE **AVERAGE YEARS OF** 15 **EXPERIENCE**





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PAGE 17



INTRODUCTION TO TRW'S SAFE PROJECT

PAGE 18



INTRODUCTION TO TRW'S SAFE PROJECT

- PROJECT HISTORY AND CURRENT POSTURE
 - ORGANIZATION, FACILITIES, AND SUBCONTRACTS
 - DEVELOPMENT APPROACH
 - AREAS FOR MANAGEMENT EMPHASIS
- THE PROJECT TEAM
- COMMITMENT
- SUMMARV for Release 2003/12/18 : CIA-RDP84-00933R000500090001-9

SPIE TO

PROJECT ORGANIZATION

PAGE 19

- THE PROJECT BEGAN AS A SMALL STUDY TEAM WITHIN SEID'S SOFTWARE SYSTEMS OPERATION
- FOR THE SYSTEM ACQUISITION PHASE, IT WAS ASSIGNED TO THE S&SO ACCOUNTING SEGMENT
 - REPORTING OPERATIONALLY TO SEID GENERAL MANAGEMENT
- RECENTLY AUGMENTED TO PROVIDE PROPER MANAGEMENT FOCUS FOR BLOCK DEVELOPMENT

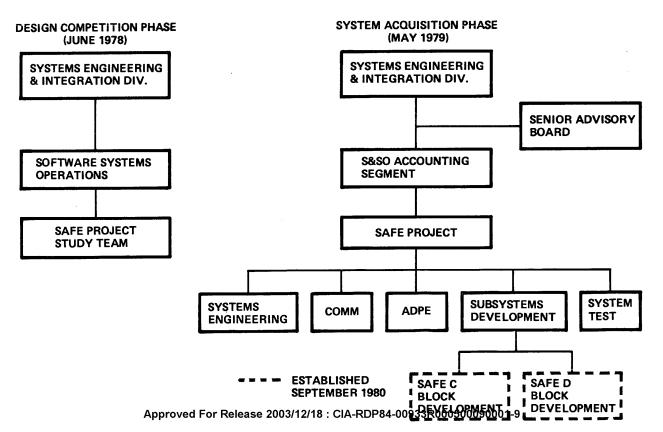
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PAGE 20



EVOLUTION OF THE PROJECT ORGANIZATION



PAGE 21



PROJECT FACILITIES AND SUBCONTRACTS

- FACILITIES TRANSITIONED FROM SPACE PARK TO INTERIM FACILITIES TO BLDG. 103
 - REFLECTING THE TRANSITION TO S&SO ACCOUNTING SEGMENT
 - TAILORED TO PROVIDE SPECIAL SECURITY FEATURES AND TECHNOLOGY FOR EFFICIENT DEVELOPMENT
- ONE INITIAL SUBCONTRACT (TO OSI) FOLLOWED BY TWO OTHER
 MAJOR SUBCONTRACTS (TO TENAVISION AND TO BURROUGHS)

PAGE 22

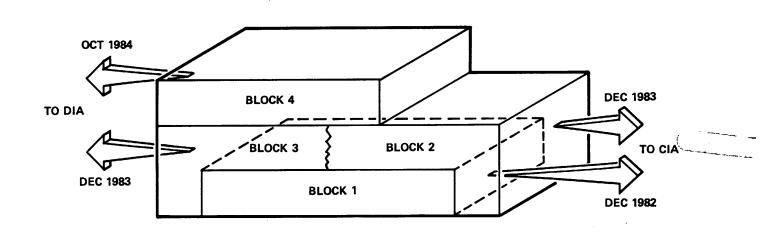


DEVELOPMENT APPROACH

- METHODOLOGY BASED ON TRW'S LARGE SYSTEM DEVELOPMENT EXPERIENCE
- TAILORED TO INCREMENTAL DEVELOPMENT AND DELIVERY ("BLOCK IMPLEMENTATION")
 - DISTRIBUTES TECHNICAL RISK AND REDUCES SCHEDULE RISK
 - SUPPORTS MORE TIMELY AND DETAILED FEEDBACK
 INTO THE DESIGN PROCESS
 - DESIGN REVIEWS
 - OPERATIONAL EXPERIENCE (LESSONS LEARNED)
 - PROVIDES AN ORDERLY WAY TO ACCOMMODATE AND SCHEDULE TECHNICAL CHANGES

BLOCK DEVELOPMENT CONCEPT

PAGE 23



PAGE 24



AREAS FOR MANAGEMENT EMPHASIS

- COMPREHENSIVE CSPO/TRW COMMUNICATION
- CONTINUING INVOLVEMENT OF SENIOR MANAGEMENT
- FORCEFUL AND CONTINUOUS TECHNICAL RISK MANAGEMENT
- REGULAR AND EXTENSIVE USER PARTICIPATION THROUGH CSPO

PAGE 25



RISK MANAGEMENT: AREAS FOR EMPHASIS

- DESIGNING AND IMPLEMENTING A BLOCK 3 DMS, AN EARLY VERSION OF WHICH CAN MEET BLOCK 1 REQUIREMENTS -ON SCHEDULE
- GETTING A SET OF "CORE SYSTEM CAPABILITIES" RUNNING **VERY EARLY**
- DEFINING AND VALIDATING THE SAFE USER INTERFACE
- UNDERSTANDING THE DIAOLS FILE ENVIRONMENT AND DATA USAGE BEFORE DESIGNING THE BLOCK 3 DATA BASE AND DMS oved For Release 2003/12/18 : CIA-RDP84-00933R000500090001-9

THE PROJECT TEAM

PAGE 26

- TRW'S SAFE PROJECT HAS ATTRACTED TOP TALENT
- THE PROJECT LEADERSHIP HAS A SOLID BACKGROUND IN DEVELOPMENT OF LARGE CUSTOM SYSTEMS
 - THEY SHARE MANY "LESSONS LEARNED"
 - AVERAGE 17 YEARS EXPERIENCE
- THE TEAM DEMONSTRATES HIGH MOTIVATION AND PERSONAL COMMITMENT TO SAFE

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TRW COMMITMENT TO SAFE

- PERSONAL COMMITMENT OF THE PROJECT TEAM
- CORPORATE COMMITMENT EXPRESSED THROUGH:
 - ASSIGNMENT OF TOP TALENT TO THIS PROGRAM
 - SUBSTANTIAL CAPITAL INVESTMENT (\$2.5M) FOR
 THE SAFE FACILITY
 - SUBSTANTIAL IR&D INVESTMENT FOR TECHNOLOGY
 AND PRODUCTS TO SUPPORT EFFICIENT DEVELOPMENT
 - SUBSTANTIAL INVESTMENT OF SENIOR MANAGEMENT TIME



SUMMARY OF MAJOR TRW THEMES

- GET TOP PEOPLE TO JOIN THE PROJECT TEAM
- KEEP SENIOR MANAGEMENT INFORMED AND INVOLVED
- MAINTAIN PERSONAL AND CORPORATE COMMITMENT TO SAFE —
 CONTINUING THROUGH SUCCESSFUL OPERATIONAL EMPLOYMENT
- STRESS DEPTH AND CONTINUITY OF TRW/CSPO COMMUNICATION
- INVOLVE THE USER IN THE DESIGN PROCESS
- FORCEFULLY CONDUCT THE ON-GOING RISK MANAGEMENT ACTIVITY
- DASTEMBLITERFECHINGCAL/RISKATOREDUSCEGGHEGIUDESPISK

PAGE 29



PROJECT STATUS

SAPE

PROJECT STATUS

EVENT/	CY 1979	CY 1980	CY 1981	CY 1982	CY 1983	CY 1984	CY 1985
ACTIVITY PHASE	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983	FY 1984	FY 1985
CONTRACT AWARD	5/79		3				
REQUIREMENTS ANALYSIS		1/80 SRR _ /	2/81 CRR				
SYSTEM DESIGN		7/80 SDR	3/81 PDR				
COMMUNICATIONS DESIGN	ŀ		3/81 8/81 COM PDR	MM	. 12/82		
BLOCK 1 IMPLEMENTATION (CIA)			DEVELOPMEN		BLOCK 1 DELIVERY	12/83	
BLOCK 2 IMPLEMENTATION (CIA)				DEVELOPME	0/83 NT SYSTE	BLOCK 2 DELIVERY	
BLOCK 3 IMPLEMENTATION (DIA)			DEVELOPMEN	11/82	SYSTEM TEST	BLOCK 3 DELIVERY	
BLOCK 4 IMPLEMENTATION (DIA)			*	DEV	/ELOPMENT	SYSTEM TEST	10/84 BLOCK 4 DELIVERY
CONTRACT COMPLETION						¥	11/84
A	proved For Re	lease 2003/1	118 : CIA-RDP8	4-00933R000	500090001-9		

PAGE 30

PAGE 31



BLOCK 1 REPORT

BLOCK 1 PROJECT OFFICE IS RESPONSIBLE FOR THE TOTAL BLOCK 1 SAFE SYSTEM

ORGANIZATIONAL ENTITIES

- BLOCK ENGINEERING
- SOFTWARE DEVELOPMENT TEAMS
 - APPLICATIONS
 - DATA MANAGEMENT
 - SYSTEM SERVICES
 - ELECTRICAL MESSAGE PROCESSING
 - USER INTERFACE

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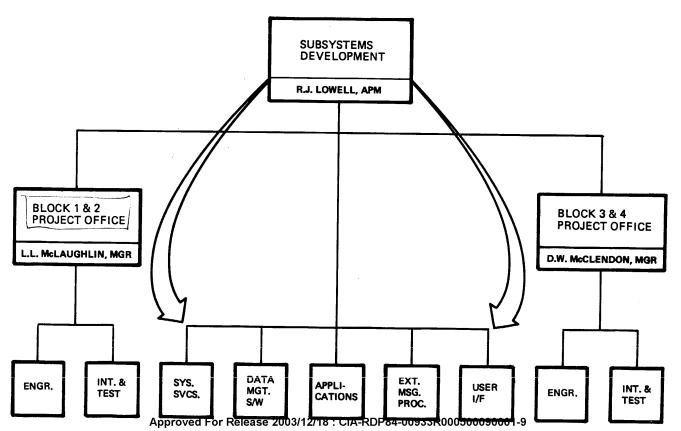
PAGE 32



SUBSYSTEMS DEVELOPMENT ORGANIZATION

1

PAGE 33





BLOCK 1 IS THE FOUNDATION FOR BOTH THE CIA AND DIA SAFE SYSTEMS

PAGE 34

- 595% OF BLOCK 1 SOFTWARE IS COMMON TO BLOCK 3
 - BASIC SET OF SYSTEM SERVICES
 - BASIC SET OF DATA MANAGEMENT SERVICES
 - STRUCTURE AND CONTROL SOFTWARE
 - NETWORK AND TERMINAL COMMUNICATIONS SOFTWARE
- ADPE AND HARDWARE ARCHITECTURE COMMON FOR ALL BLOCKS

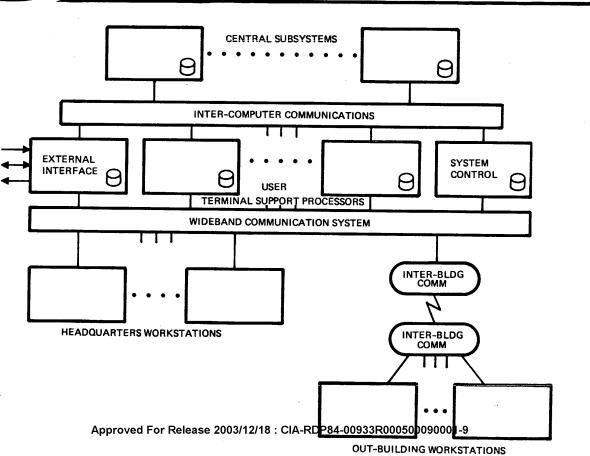


THE DESIGN ALSO MAXIMIZES INTRA-SUBSYSTEM SOFTWARE COMMONALITY

- ALL SUBSYSTEM DESIGNS ARE LAYERED BASED ON SYSTEM DESIGN GUIDELINES
 - APPLICATIONS
 - SYSTEM SERVICES
 - DATA MANAGEMENT SERVICES
- LAYERED DESIGN MAXIMIZES THE UTILIZATION OF COMMON SOFTWARE BETWEEN SUBSYSTEMS
- COMMON DESIGN IS MAJOR FACTOR IN ADDRESSING SYSTEM COST AND RISK

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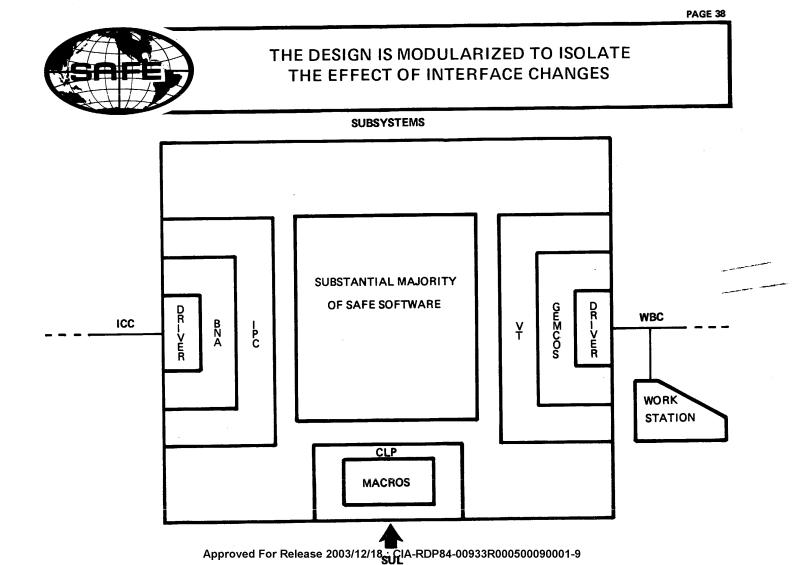




SOFTWARE COMMONALITY MATRIX

PAGE 37

SOFTWARE PROGRAMS	SUBSYSTEMS				
SULLMARE FRUGRAPIS	SCM	UTS	GL1	GL2	EMP
System Services IPC Process Support Terminal Comm. File Access Miscellaneous	X X X X	X X X X	X X X X	X X X X	X X X X
Applications Programs Keyboard Process Display Processes File Server Process Mail Dissemination Process Creator Configuration Manager Health Monitor On-Line System Test Distribution Directory Maint. System Initialization System Termination System Switch Security Processor MIS Logger MIS Report Generator Print Control External I/Fs Message Analysis Document Dissemination Sequencing Control	X X X N/A X X X X X X X X X	X X X N/A X X N/A N/A X X X	N/A N/A X N/A X X N/A N/A N/A X X	N/A N/A X N/A X X X N/A N/A X X X	N/A X X N/A X X N/A X X N/A X X X X X X X X X
DMS Programs ● VT DMS ● Maintenance Function ● Record Retrieval Function ● Search Function ● Support√をむちず収めease 2003/12/1	X X X X 8: OMA-R	X X X X DP84~009	N/A X X X X 33R0\050	N/A X X X X 0090⁄001-	N/A N/A N/A N/A 9 N/A





BLOCK 1 CONTAINS THE KEY CAPABILITIES WHICH AUTOMATE THE USERS FILE ENVIRONMENT FOR CIA

- CURRENT AWARENESS BY AUTOMATIC DISSEMINATION
- INTERPROFILE LOGIC USING GLOBAL PROFILES
- AFB FOR CENTRAL INDEX
 FILES
- CATALOG FILE MAINTENANCE
- CENTRAL INDEX FILE
- PRIVATE FILES

- TEXT SEARCH BY STREAMING
- INDEX SEARCH
- COMPOSE AND EDIT
- SYSTEM-CONTROLLED INPUT/OUTPUT FORMATTING
- BATCH REPORTING OF MIS DATA
- DIRECT CONNECTION TO ODP

WITH

 USER POPULATION OF 450 FULL FUNCTION USERS SHARING Approved For Release 2003/12/18 : CIA-RDP84-00933R000500090001-9 230 TERMINALS



BLOCK 2 INTRODUCES SUBSTANTIALLY GREATER OPERATIONAL CAPABILITIES

PAGE 40

ALL OF BLOCK 1 PLUS:

- INTERPROFILE LOGIC USING INTERMEDIATE AND GLOBAL PROFILES
- AFB FOR BRANCH/PRIVATE INDEX FILES
- INVERTED DOCUMENT TEXT SEARCH CAPABILITY -
- CONTROLLED ACCESS
- USER-SPECIFIED THRESHOLDS
- USER CONTROLLED INPUT/OUTPUT FORMATTING
- ODP LINK AND BATCH TO ODP

SALE

INCREMENTAL DEVELOPMENT SCHEDULES RISK REDUCING ACTIVITIES EARLY

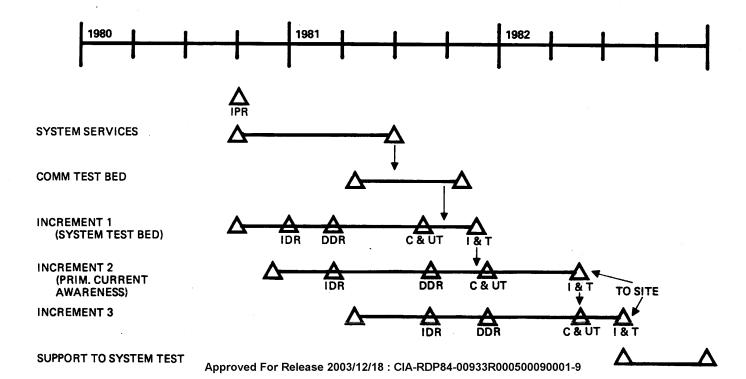
PAGE 41

- ACCOMPLISH EARLY SYSTEM SERVICES DESIGN AND INTEGRATION
- PROVIDE EARLY COMMUNICATIONS INTEGRATION AND NETWORKING CAPABILITY
- SUPPORTS VERY EARLY EXTERNAL INTERFACE AND LIVE DATA TESTING AT LANGLEY
- YIELDS A DEMONSTRATABLE SAFE IN EARLY SUMMER 1982
 - TO MAKE SAFE REAL



DEVELOPMENT SCHEDULE FOR BLOCK 1

PAGE 42



SAFE

INCREMENTAL DEVELOPMENT PROVIDES MORE EFFECTIVE USE OF PEOPLE AND RESOURCES

DEVELOPMENT GEARED TO INTEGRATION

- SMOOTH TRANSITION TO INTEGRATION AND TEST
- EFFICIENT INTEGRATION

(FEWER TEST DRIVERS; NO SOFTWARE ON THE SHELF)

(OBJECTIVE IS HIGH PRODUCTIVITY)

- FREQUENTLY SPACED REVIEWS
 - IMPORTANT TO GOVERNMENT
 - GIVES TRW BETTER VISIBILITY AND CONTROL
- A BALANCED SKILL MIX IS ACHIEVED OVER THE DEVELOPMENT PERIOD

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PAGE 43

SIRIFE

DEVELOPMENT FACILITY PROVIDES ACCESSIBLE DEVELOPMENT SUPPORT AND A FLEXIBLE TEST ENVIRONMENT

PAGE 44

• SAFE TERMINALS IN PROGRAMMERS' OFFICES

- LOG-ON FOR DIRECT CONNECT TO MACHINES FOR DEVELOPMENT
- LOG-ON VIA WBC FOR DEVELOPMENT TEST

RECONFIGURABLE NETWORK

- STAND-ALONE MAXI FOR DEVELOPMENT
- ALL-MIDI NETWORK FOR EARLY SOFTWARE INTEGRATION
- ALLOWS ANY MACHINE TO BE ANY SUBSYSTEM



THE BLOCK 1 SOFTWARE MAXIMIZES THE USE OF APPLICABLE COMMERCIAL SOFTWARE

- OPERATING SYSTEM MCP
- FILE ACCESS DMS II
- NETWORK COMMUNICATIONS BNA
- TERMINAL COMMUNICATIONS GEMCOS

PAGE 46



EMPHASIS IS CURRENTLY BEING PLACED IN SEVERAL AREAS TO MANAGE RISK

- CONTROLLING GROWTH OF SOFTWARE SIZE AND COMPLEXITY
- INTER-COMPUTER COMMUNICATIONS (ICC) SCHEDULE AND PERFORMANCE
- WIDEBAND COMMUNICATIONS (WBC) SCHEDULE AND INTEGRATION
- TIMELY DEFINITION AND COORDINATION OF THE USER INTERFACE

SAFE

FOUR TECHNIQUES ARE USED TO CONTROL THE GROWTH OF SOFTWARE SIZE AND COMPLEXITY

PAGE 47

- COMMONALITY OF DESIGN HELPS MINIMIZE SOFTWARE TO BE DEVELOPED
- USE OF EXISTING COMMERCIAL SOFTWARE REDUCES NEED FOR NEW DEVELOPMENT
- LAYERING PROMOTES STANDARD INTERFACES BETWEEN SUBSYSTEMS AND REDUCES INTEGRATION EFFORT
- INCREMENTAL DEVELOPMENT SCHEDULES MINIMIZE BREAKAGE AND PRECLUDE LARGE, COMPLEX INTEGRATION AND TEST DRIVERS

INTERIM, PRIMARY, AND FALL BACK SOLUTIONS HAVE BEEN IDENTIFIED FOR THE ICC

PAGE 48

- DATA COMM UNDER BNA PROVIDES AN INTERIM CAPABILITY FOR THE SYSTEM TEST BED (INCR 1)
- NSC (HYPERchannel) UNDER BNA BEING DEVELOPED BY BURROUGHS AS A BLOCK 1 AND FOC SOLUTION
- A FALLBACK BLOCK 1 SOLUTION IS THE BURROUGHS HUB

SALE

THE BLOCK 1 PLAN MAKES USE OF INTERIM AND PROTOTYPE WBC SOLUTIONS

PAGE 49

- DATA COMM UNDER BNA PROVIDES AN INTERIM CAPABILITY FOR CONNECTING WORKSTATIONS TO THE NETWORK
- PROTOTYPES OF THE WBC TECHNOLOGY WILL BE EXERCISED IN THIS BUILDING
 - CABLE
 - BIU
 - PIU
- WBC DEVELOPMENT BEING INTEGRATED WITH THE BLOCK 1 PROJECT OFFICE TO COORDINATE DESIGN AND DIRECT INTEGRATION AND TEST

SAFE

DEFINITION AND VALIDATION OF THE USER INTERFACE

- JOINT CIA, DIA AND TRW WORKING GROUP
 - OPERATIONAL CONCEPTS
 - USER SCENARIOS
- INTENSIVE COORDINATION OF USER LANGUAGE SPECIFICATION
- DESIGNER/ANALYST INTERACTION AT NFAC
 - EXPANDS AWARENESS ON BOTH SIDES
 - IMPORTANT FOR EFFECTIVE DESIGN
- PAPER MODELS AND WORKSTATION MOCK-UPS
- CLOSE INTEGRATION OF USER LANGUAGE EFFORT AND USER INTERFACE IMPLEMENTATION

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PAGE 50

PAGE 50



DEFINITION AND VALIDATION OF THE USER INTERFACE

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- PAPER MODELS AND WORKSTATION MOCK-UPS
- CLOSE INTEGRATION OF USER LANGUAGE EFFORT AND USER INTERFACE IMPLEMENTATION

SUMMARY OF KEY THEMES

PAGE 51

- MAKE BLOCK 1 DESIGN AN EFFECTIVE FOUNDATION FOR BOTH SAFE C AND D
- DEVELOP A BLOCK 1 SYSTEM WHICH PROVIDES A VIABLE OPERATIONAL CAPABILITY
- AGGRESSIVELY MANAGE TECHNICAL, COST AND SCHEDULE RISKS
- FOLLOW BLOCK 1 THROUGH A SUCCESSFUL TRANSITION TO THE USER

PAGE 52



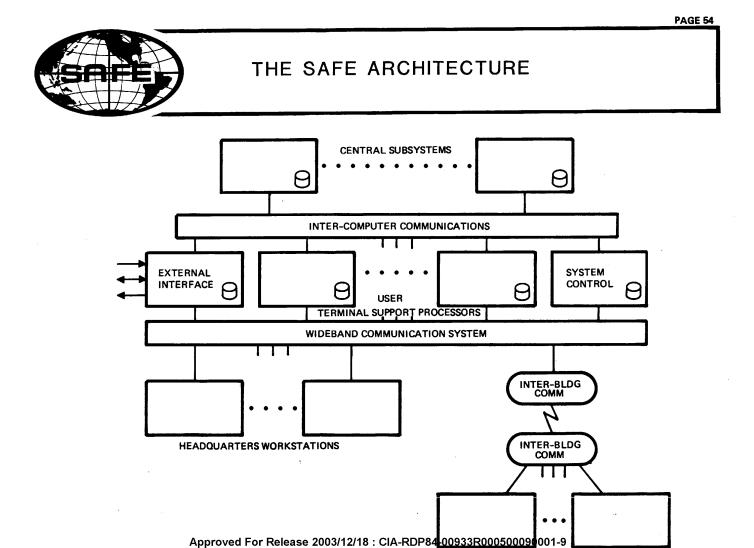
BLOCK 3 REPORT

PAGE 53



SAFE D AGENDA TOPICS

- BLOCK 3 & 4 CONTENTS
- BLOCK 3 ORGANIZATION
- BLOCK 3 & 4 DEVELOPMENT APPROACH
- KEY AREAS FOR MANAGEMENT EMPHASIS



OUT-BUILDING WORKSTATIONS

PAGE 55



CONTENTS OF BLOCK 3 (DIA)

BLOCK 1 PLUS:

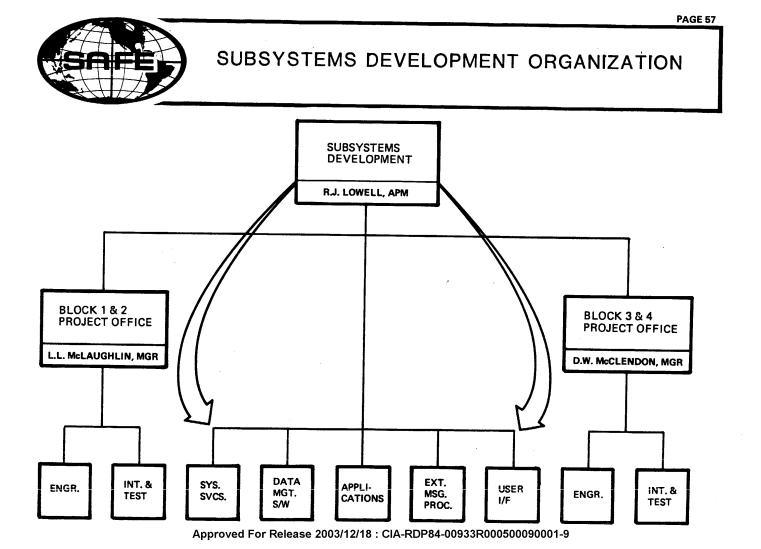
- DATA BASE MANAGEMENT FOR LARGE STRUCTURED/ INTER-RELATED FILES
- REPORT PRODUCTION
- DISSEMINATION OF INTERNALLY-COMPOSED DOCUMENTS
- TELECONFERENCING USING ROUTE CAPABILITIES
- LOW RESOLUTION GRAPHICS
- DIA/DIAOLS OPERATIONS CONVERSION
- ON-LINE PROGRAMMING
- BATCH SUPPORT
- USER POPULATION OF 500 FULL FUNCTION USERS SHARING 230 TERMINALS Release 2003/12/18: CIA-RDP84-00933R000500090001-9



CONTENTS OF BLOCK 4 (DIA)

PAGE 56

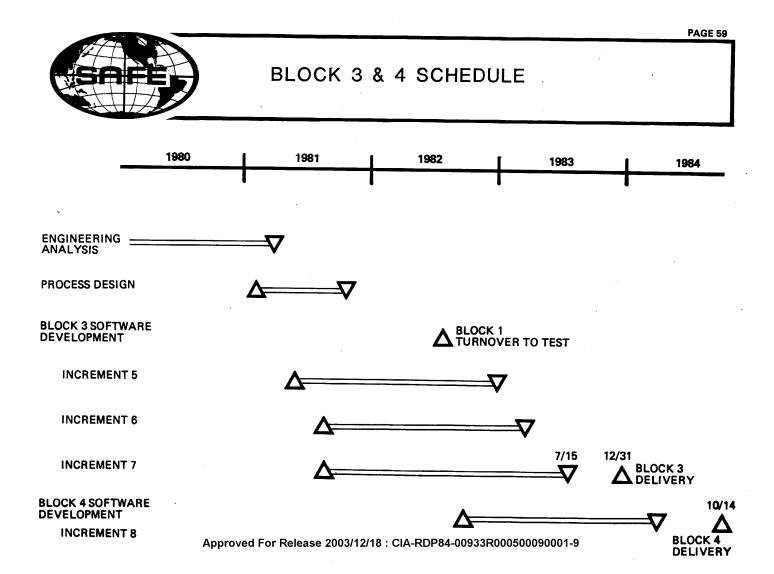
- BLOCKS 1, 2, AND 3 PLUS:
 - AUTOMATIC RECONFIGURATION
 - OPERATOR CONTROL OF USER PRIORITIES
 - ADDITIONAL CONVERSION





BLOCK 3 INCREMENTS

- INCREMENT 5 DATA BASE AND ON-LINE USER SUPPORT
 - STRUCTURED DATA BASE
 - GEOGRAPHIC AND LINKED SEARCHES
- INCREMENT 6 BATCH AND EXTERNAL SUPPORT
 - BATCH SUPPORT
 - ON-LINE PROGRAMMING
 - EXTERNAL INTERFACES
 - COLLATERAL FILTER
- INCREMENT 7 DIA/DIAOLS OPERATIONS CONVERSION
 - DATA AND PROGRAM CONVERSION
 - RPG UPDATE
 - BATCH PROGRAM CONVERSION
 - Approved For Release 2003/12/18 : CIA-RDP84-00933R000500090001-9 PROCEDURES CONVERSION



CURRENT BLOCK 3 ENGINEERING ANALYSIS ACTIVITIES

PAGE 60

- BLOCK 1 COMMON BASE AND BLOCK 3 DESIGN COMPATIBILITY
 - IDF DMS DESIGN CONCEPTS
 - USER INTERFACE AND APPLICATIONS IDF DESIGN CONCEPTS
 - RPG/BATCH DESIGN ANALYSIS
 - SAFE D OPERATIONAL CONCEPT DEFINITION
- CONVERSION REQUIREMENTS DEFINITION
- EXTERNAL INTERFACES
- SYSTEM INTEGRATION AND SUBSYSTEM TEST PLANS AND PROCEDURES

PAGE 61



BLOCK 3 PROCESS DESIGN ACTIVITIES

- BATCH/RPG/DMS/APPLICATIONS INTERFACE ANALYSIS AND DESIGN DEFINITION
- OPERATIONAL CONCEPT DEFINITION
- INITIATE
 - H/W AND S/W ARCHITECTURE DESIGN
 - BLOCK 1/3 TRANSITION
 - DETAILED INCREMENT DEFINITION
 - CATEGORY B CONVERSION REQUIREMENTS DEFINITION
 - TEST AND CONVERSION TOOLS DEFINITION
- IN-PROCESS REVIEWS
 - JUNE '81 (START INCREMENT 5 INITIAL DESIGN)
 - OCTOBER '81 (START INCREMENT 6 & 7 INITIAL DESIGN)

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SAFE

KEY AREAS FOR MANAGEMENT EMPHASIS

PAGE 62

- DATA BASE MANAGEMENT SYSTEM
 - DMS II
 - ALTERNATIVES
- DIA CONVERSION
 - SAFE D OPERATIONAL CONCEPT
 - CONVERSION REQUIREMENTS (CATEGORY B, C, AND D)
- COMPARTMENTED MODE OF OPERATION
 - BLOCK 3 DESIGN IMPLICATIONS

PAGE 63



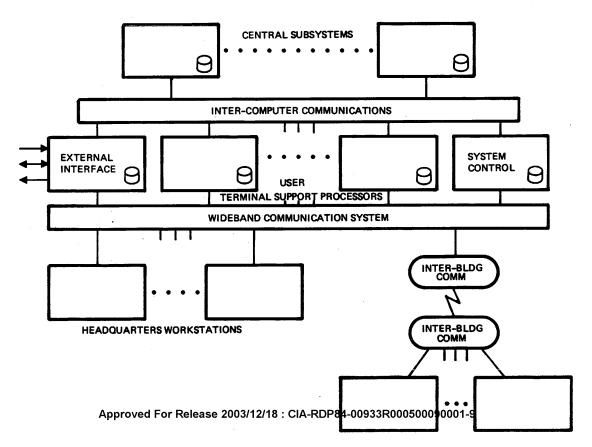
SAFE ADPE



THE SAFE ARCHITECTURE

1 1 1

PAGE 64



PAGE 65



CURRENT HARDWARE BASELINE

	DF	С	D	TOTAL
GLOBAL (DUAL MAXI)	1	1	1	2
MIDI	5	10	6	16
ICC ADAPTERS	7	12	8	20



ADPE SCHEDULE-DF

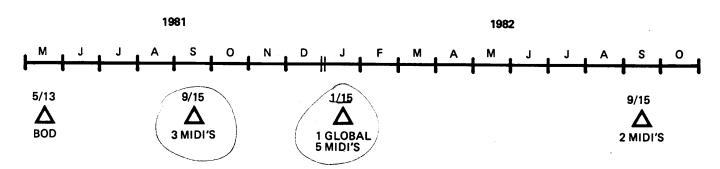
PAGE 66

SALE

ADPE SCHEDULE

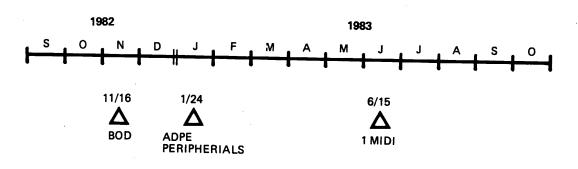
PAGE 67

SITE C



ADPE SCHEDULE

SITE D

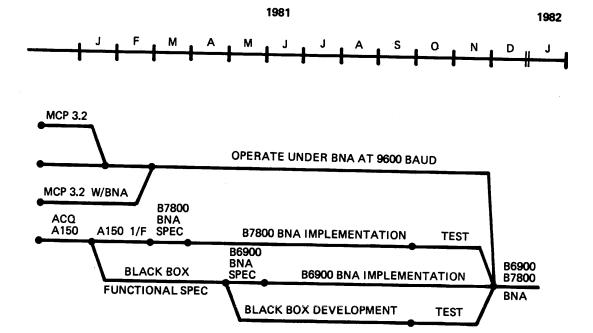




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ICC SCHEDULE

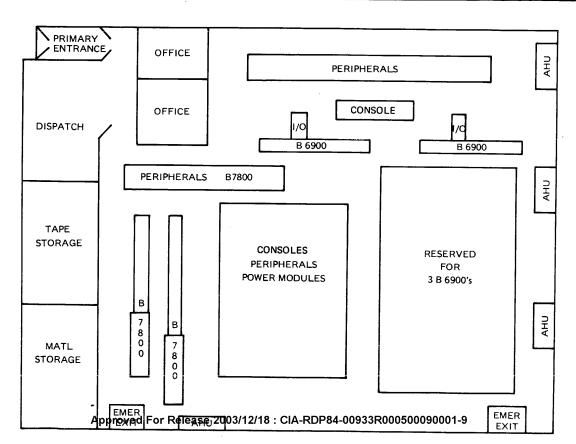


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PAGE 70



DF CONFIGURATION

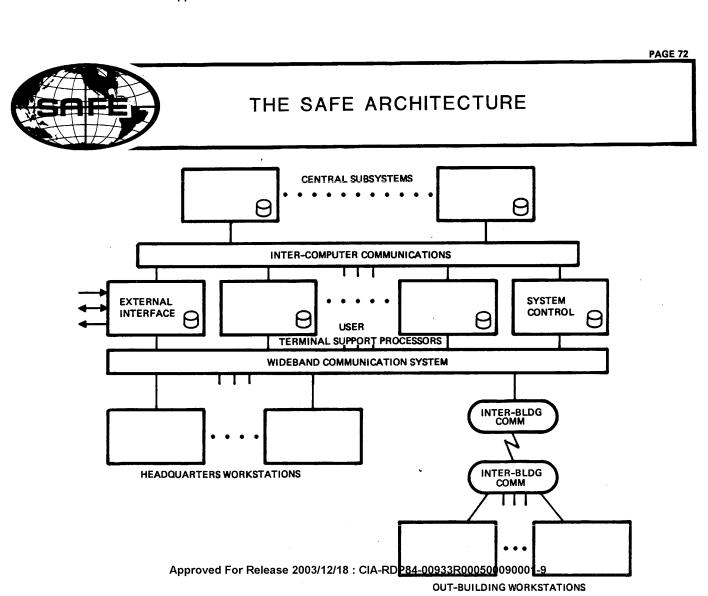


PAGE 71



COMMUNICATIONS

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WIDEBAND COMMUNICATIONS (WBC) SUBSYSTEM

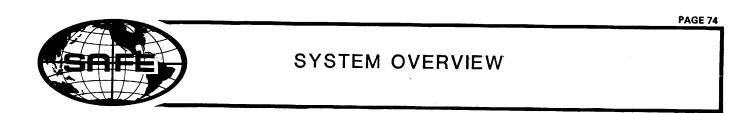
PAGE 73

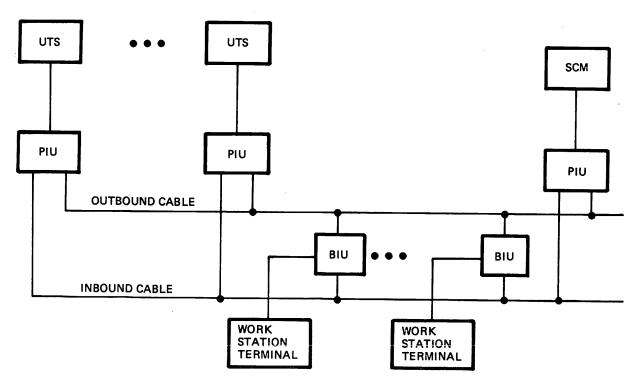
• THE WBC FOR SAFE REPRESENTS:

- UNIQUE APPLICATION OF EXISTING TECHNOLOGIES
- HERETOFORE UNAVAILABLE COMMUNICATIONS CAPABILITY
- SUPPORT FOR 2,000 PLUS SAFE USERS
- GROWTH TO 10,000 PLUS USERS

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Approved For Release 2003/12/18: CIA-RDP84-00933R000500090001-9

PAGE 75

SIRIFE

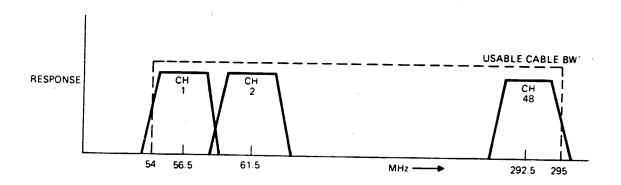
TECHNIQUE

- FREQUENCY DIVISION MULITPLEXING (FDM)
- TIME DIVISION MULTIPLEXING (TDM)
- FREQUENCY AGILE MODEMS

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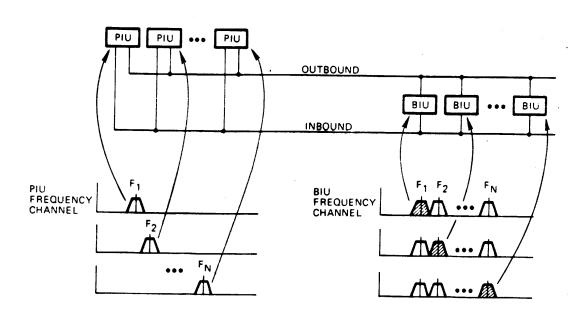


BUS FREQUENCY PLAN



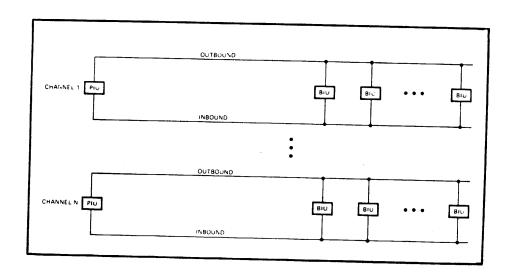


SINGLE POINT TO MULTIPLE POINT NETWORK



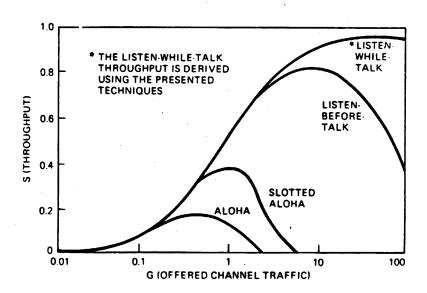
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SINGLE POINT TO MULTIPLE POINT LAYOUT



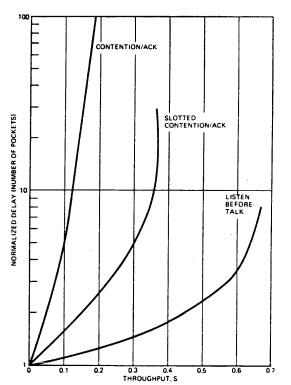
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THROUGHPUT FOR FOUR ACCESS MODES



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NORMALIZED PACKET DELAY VERSUS THROUGHPUT



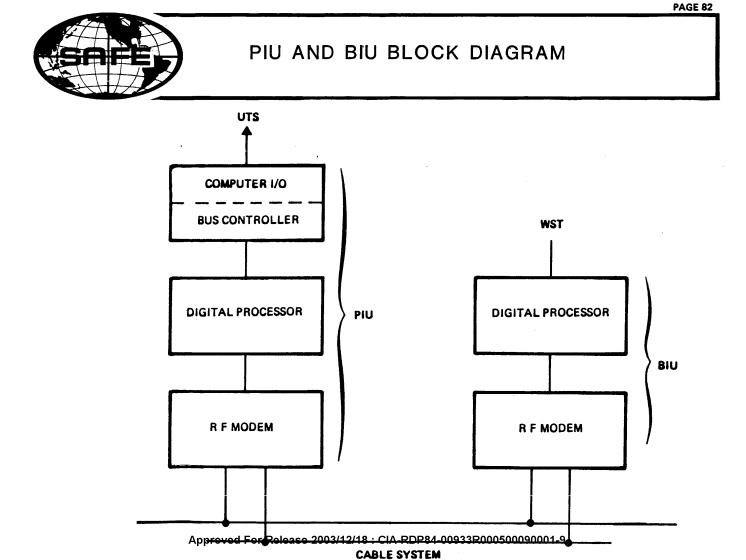
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HARDWARE

- PROCESSOR INTERFACE UNIT (PIU)
- BUS INTERFACE UNIT (BIU)
- CRYPTOGRAPHIC EQUIPMENT

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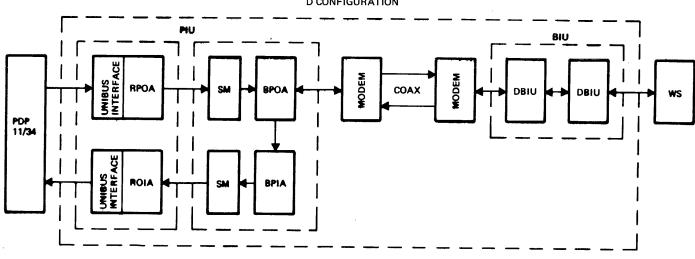


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SAFE ENGINEERING TEST D CONFIGURATION

PAGE 83

SAFE ENGINEERING TEST D CONFIGURATION

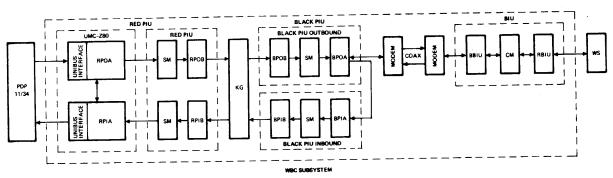


WBS SUBSYSTEM

SAFE ENGINEERING TEST SINGLE THREAD CONFIGURATION

PAGE 84

SINGLE THREAD CONFIGURATION



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PAGE 85

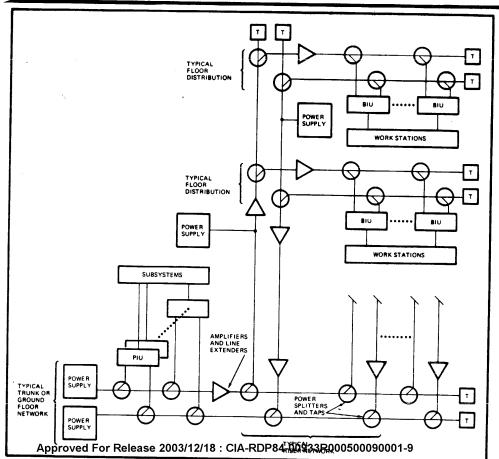


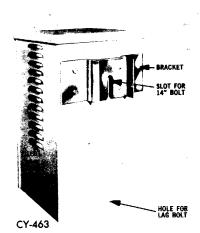
MEDIA

- COAXIAL CABLE
- AMPLIFIERS
- SPLITTERS/TAPS
- DROPS



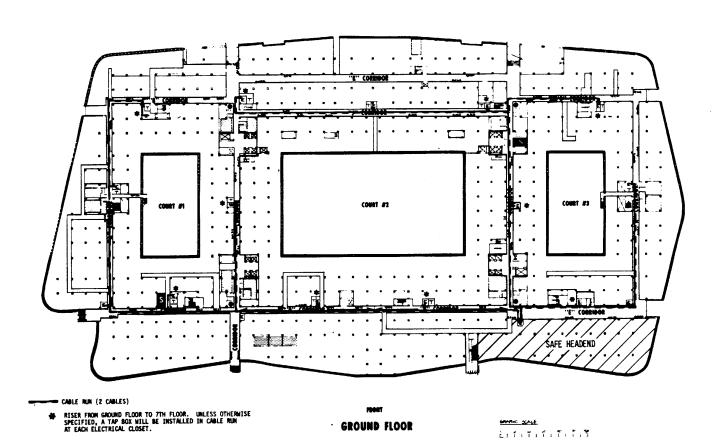
CABLE NETWORK FUNCTIONAL BLOCK DIAGRAM







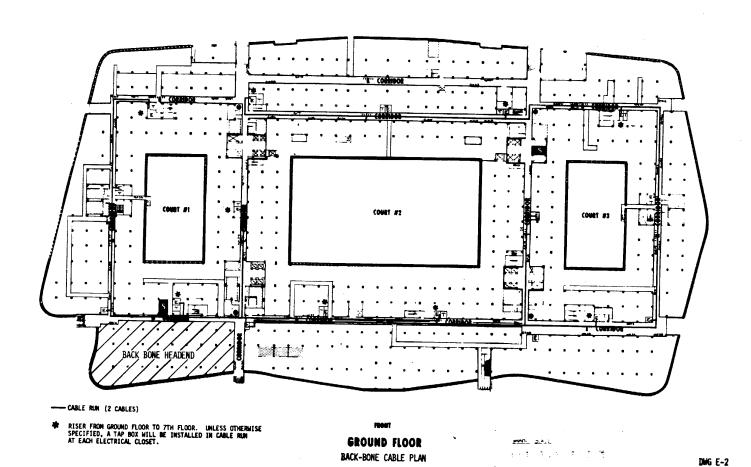
PAGE 88



Approved For Release 2003/12/18: CIA-RDP84-00933R000500090001-9

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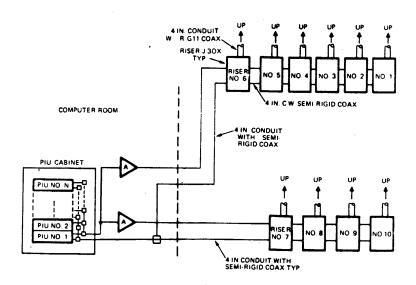
PAGE 89

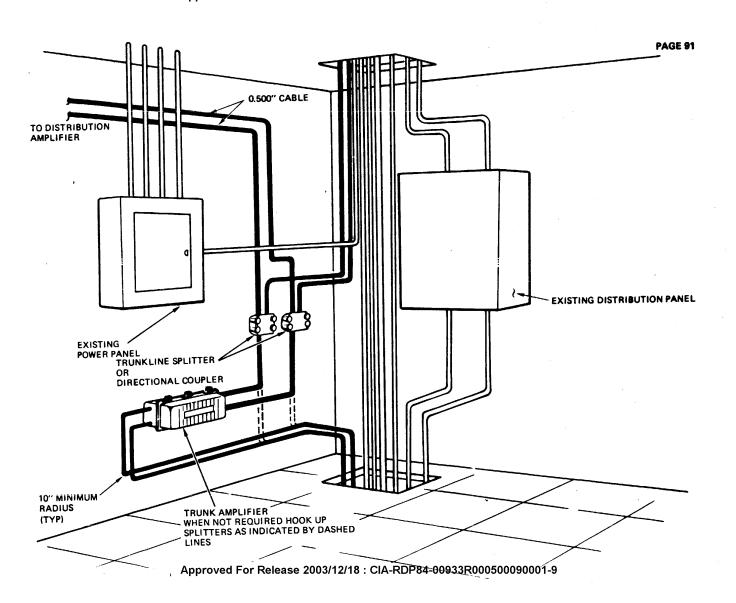


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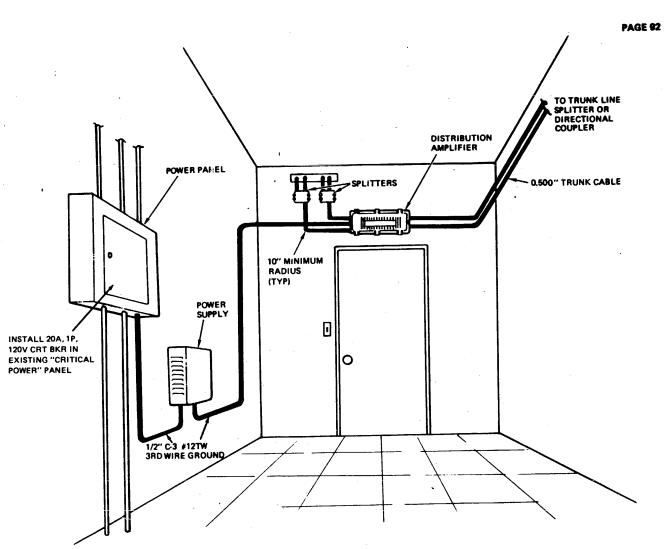


GROUND FLOOR CABLE NETWORK CONFIGURATION



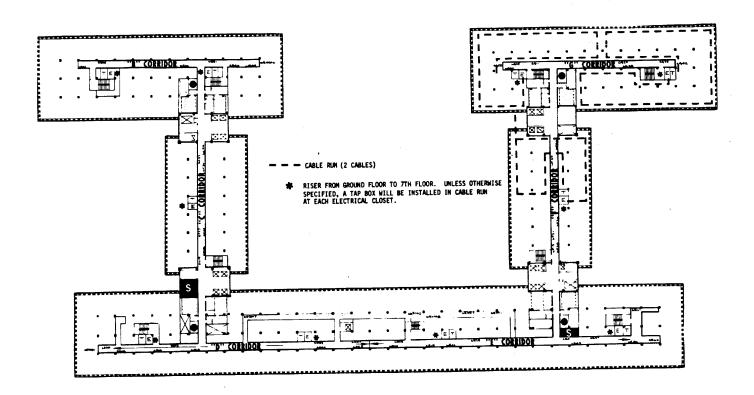


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PAGE 93

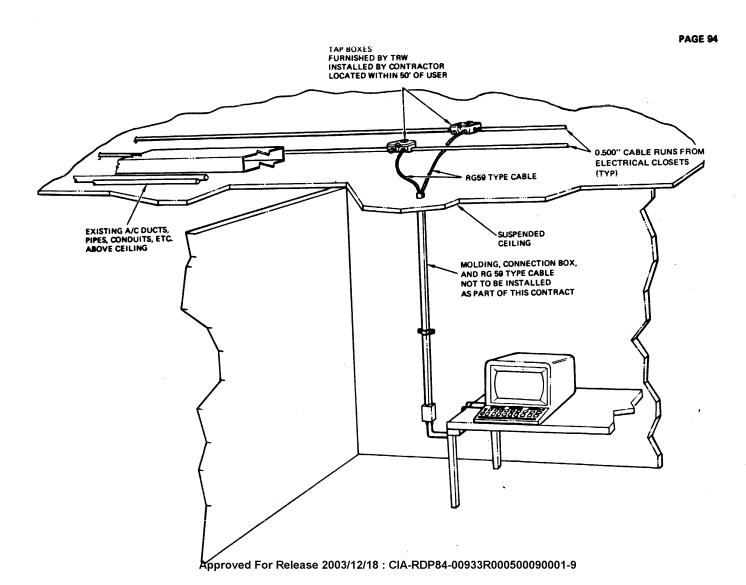


FRONT

SIXTH FLOOR

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SAFE COMM ENGINEERING TEST CONFIGURATION

